
SAHARA
FOREST
PROJECT

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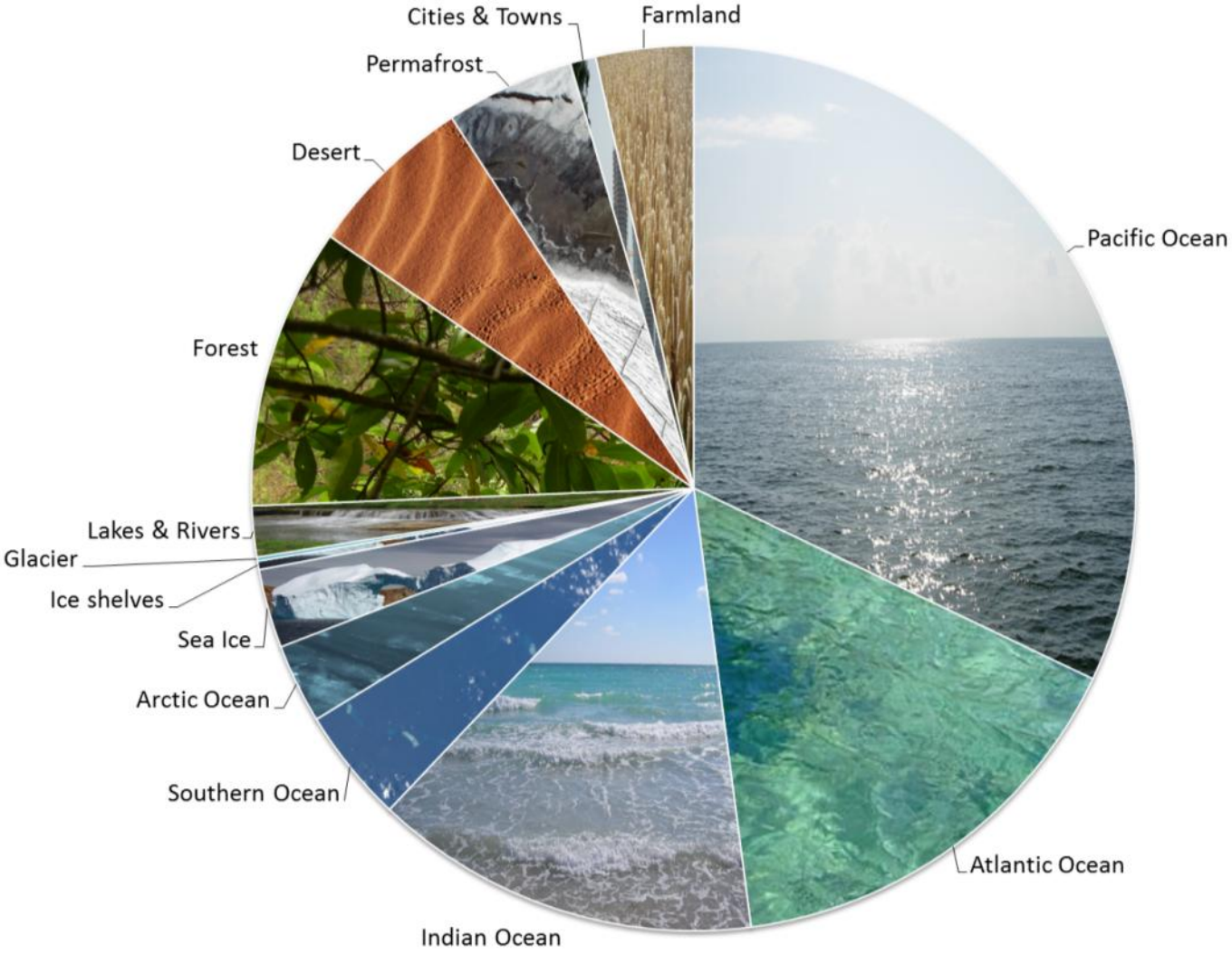

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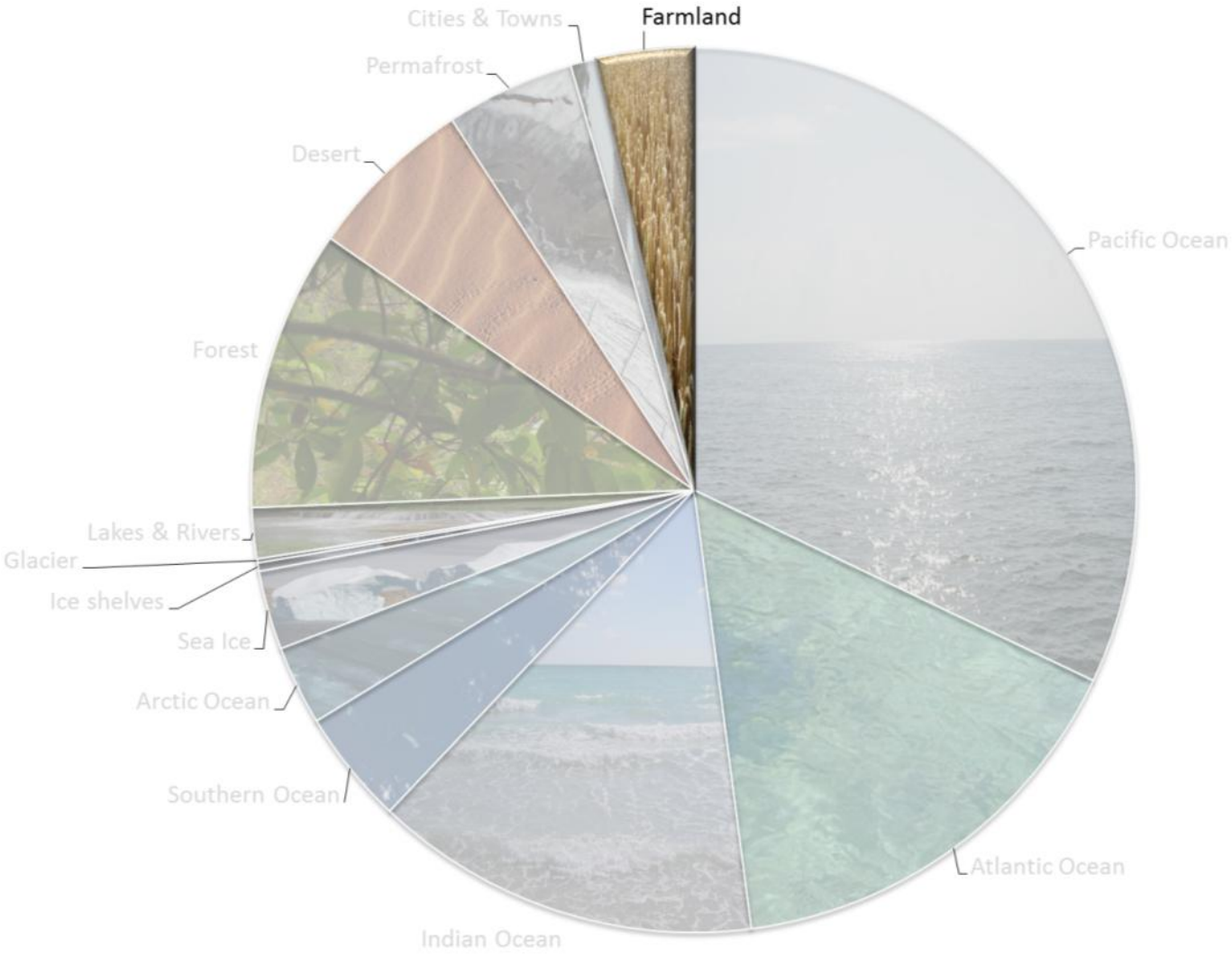
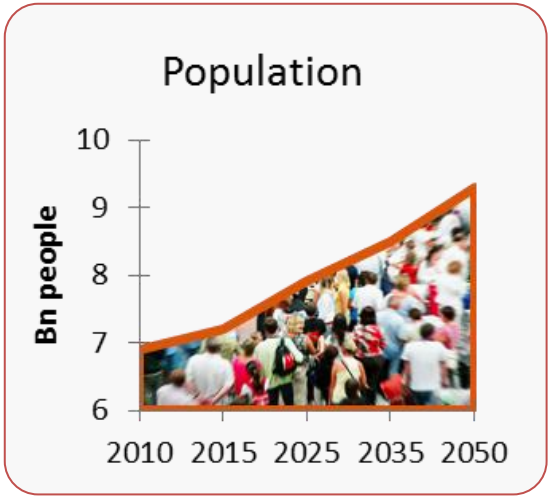
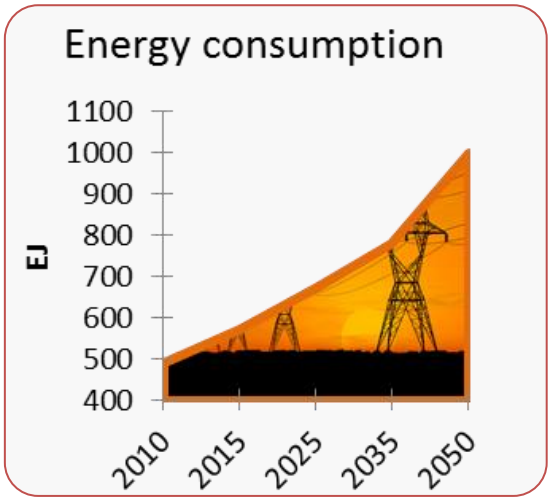
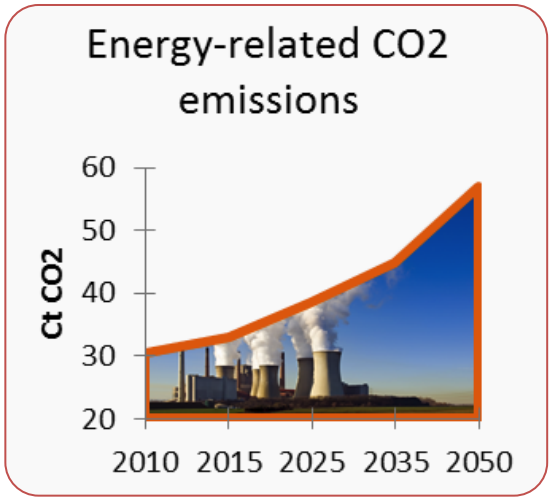
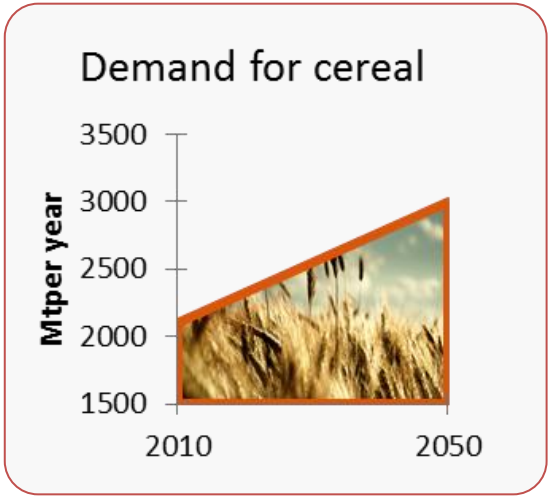


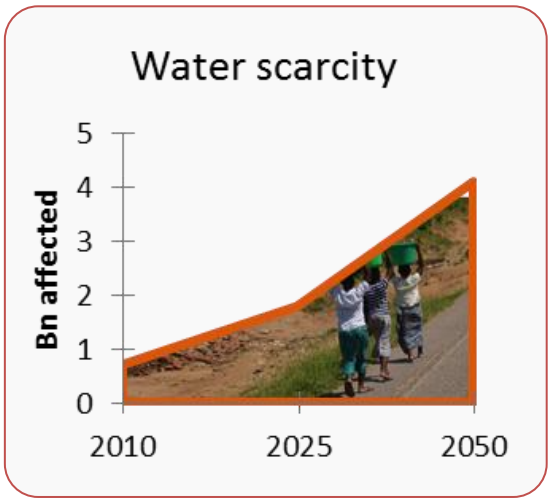
Current megatrends

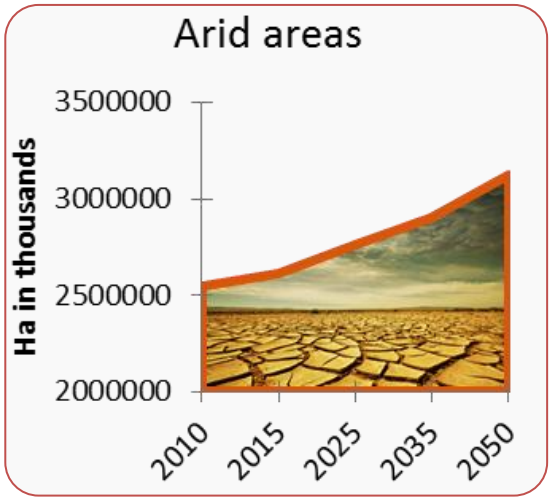












Source: «The Impact Potential of The Sahara Forest Project – a scenario towards 2050»

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Trends can be turned

Rethinking resource use and production systems to create restorative growth

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Rethinking resource use

Extractive use of resources

Sustainable use of resources

Restorative use of resources

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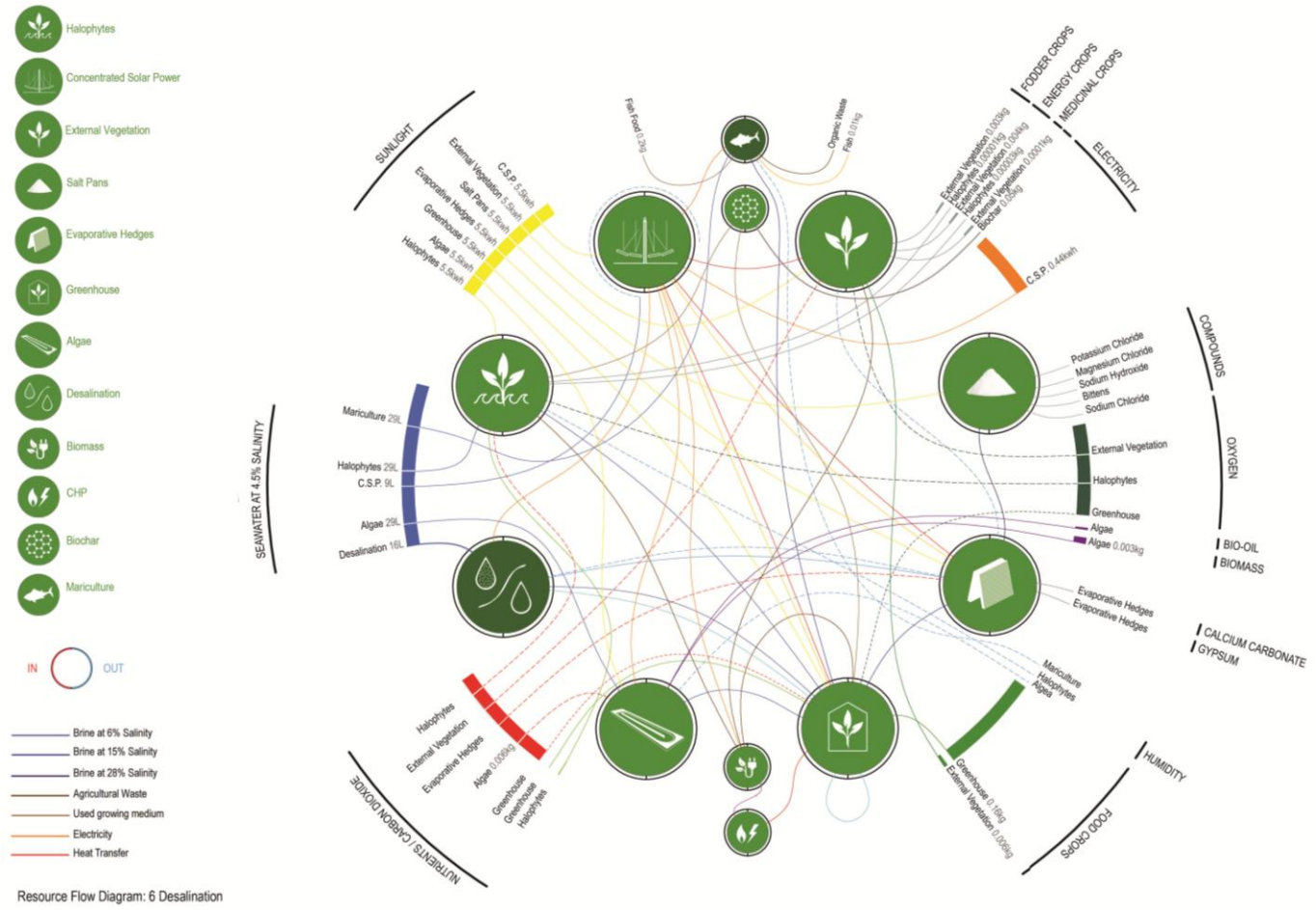
Rethinking production systems



Resource Flow Diagram: 6 Desalination

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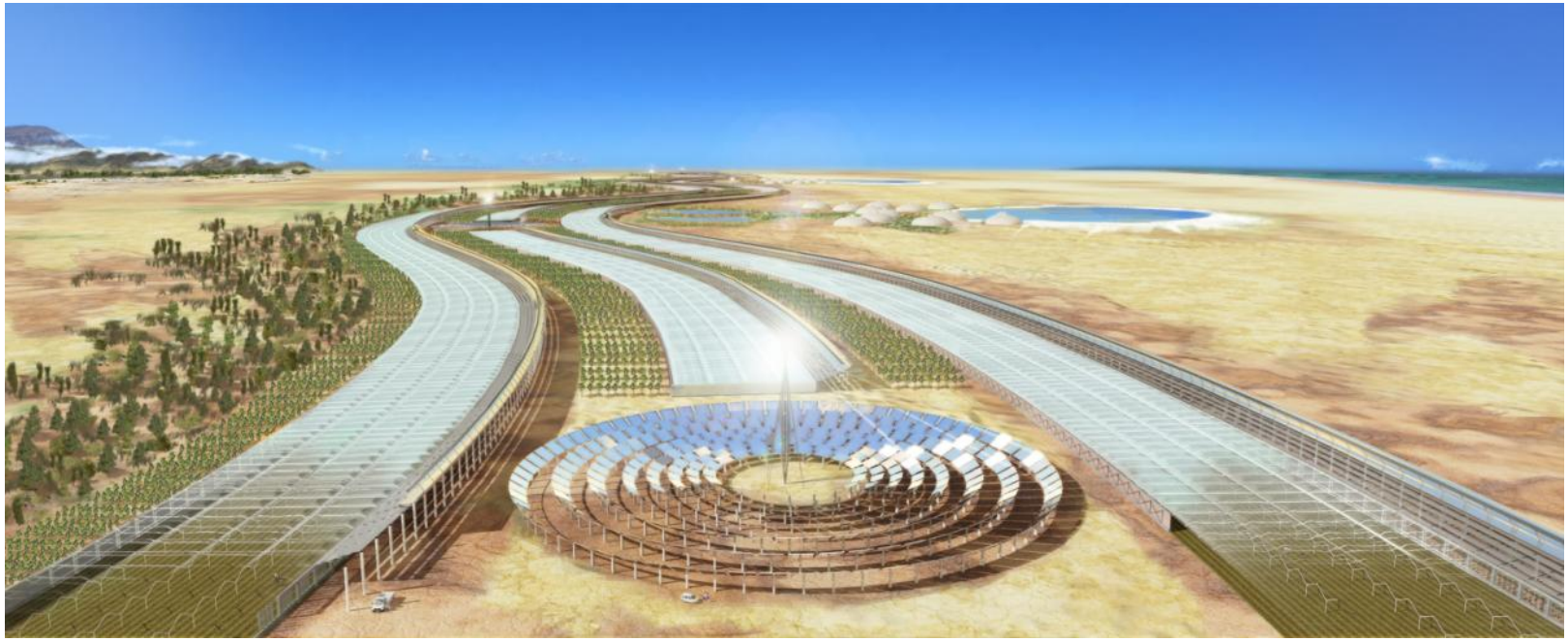
Restorative growth:

Revegetation and creation of green jobs through profitable production of food, freshwater, biofuels and electricity



The core concept

Self irrigating

Saltwater Greenhouse

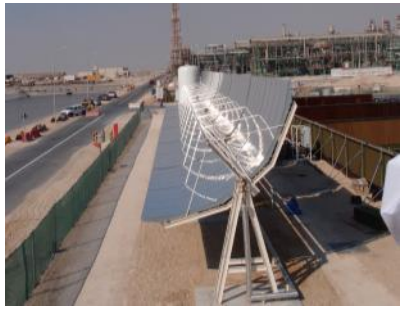
Yield-efficient climate
Cooling of CSP
Humidity for vegetation

Concentrated Solar Power

Heat for desalination
Power for greenhouses

Outside Vegetation

Dust arresting for CSP
Soil stabilizing



The SFP Greenhouse

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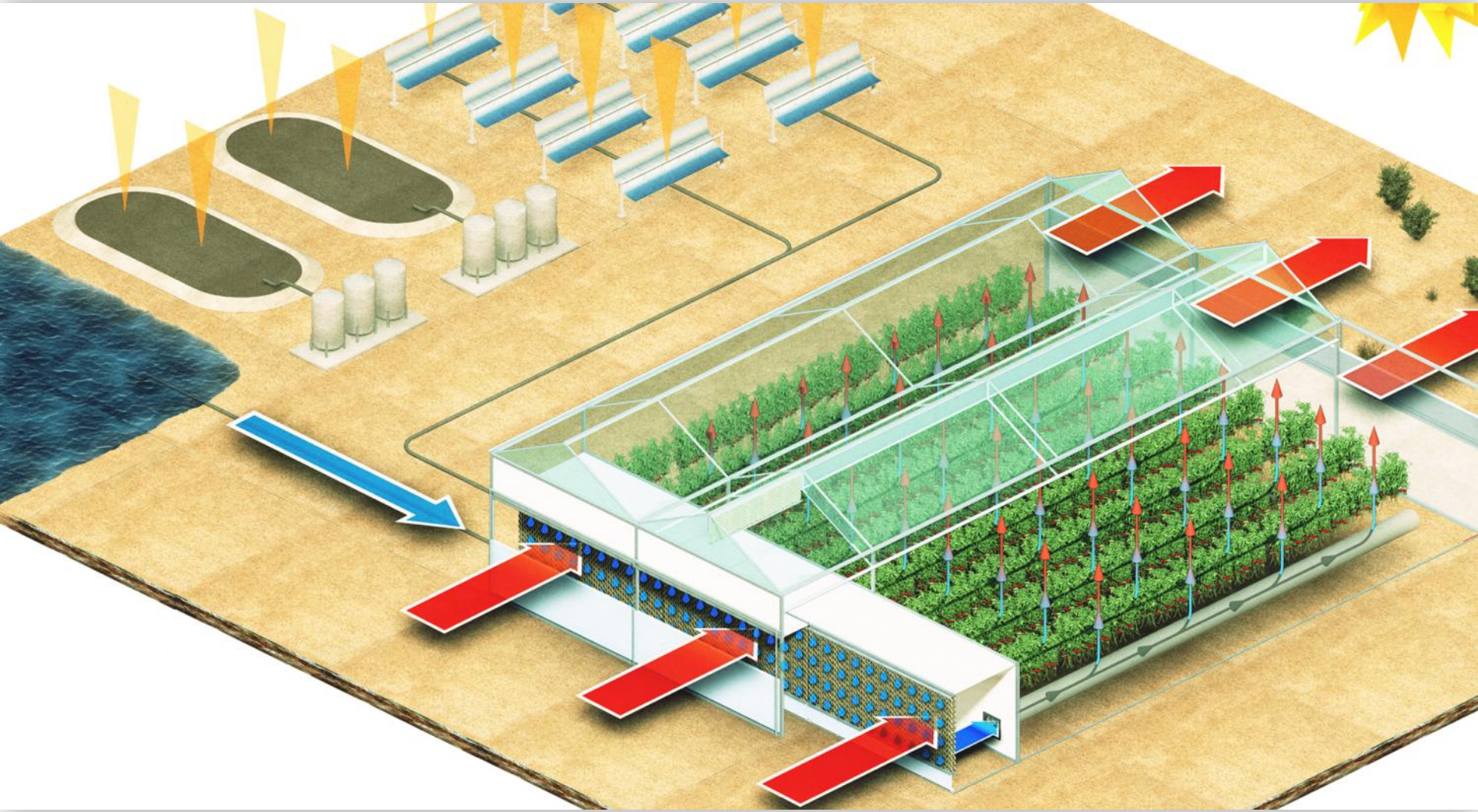


Outside vegetation

- Structures used to evaporate brine down to concentrated solution and allow insoluble elements to precipitate out
- Provides humid and sheltered conditions for external planting

Concentrated Solar Power

- CSP has potential to provide large-scale renewable energy production
- CSP with water cooling can increase the energy production with 4-9 %
- CSP needs water for cleaning of the mirrors
- CSP is less efficient with dust in the air
- CSP plants should be located in areas with abundant sunlight, but these areas often lack freshwater resources

How to supply the water to arid areas?

Synergies between core technologies

Saltwater greenhouse benefits from CSP

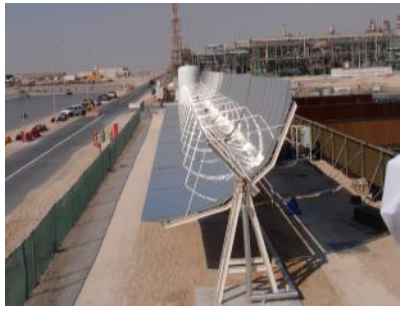
- Waste heat from CSP fuels desalination process
- CSP provides power for electrical installations

CSP benefits from greenhouse and vegetation

- Heat transfer to greenhouse and evaporative hedges; cooling towers are avoided
- The hedges and new vegetation stabilizes soil and reduces dust
- Greenhouses/desalination provides freshwater for mirror rinsing

Outside Vegetation benefits from greenhouses and saltwater infrastructure

- Greenhouse and hedges create a humid, vegetation-conducive climate
- Desalination provides irrigation water for outdoor crops



Concepts extensions

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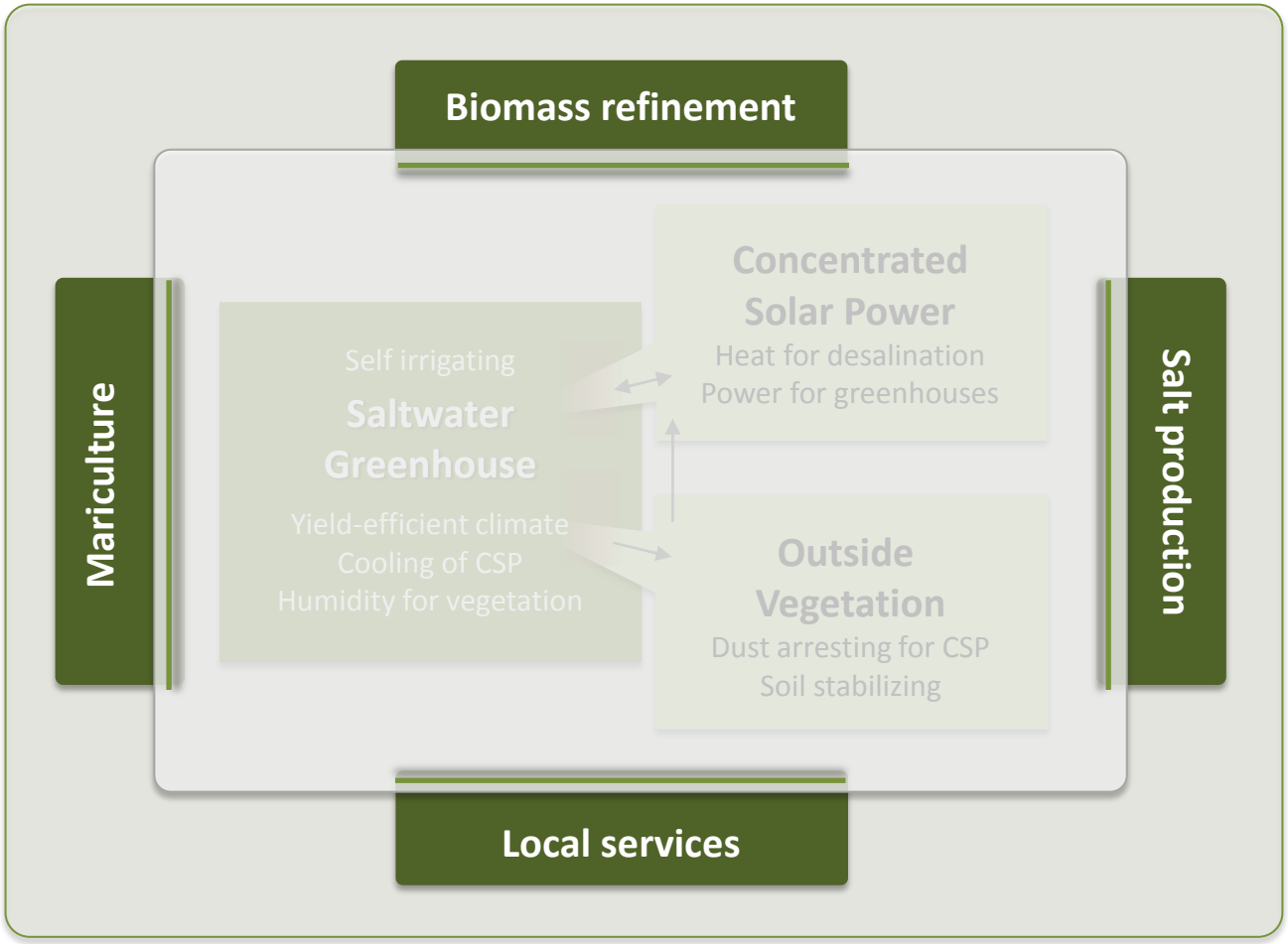
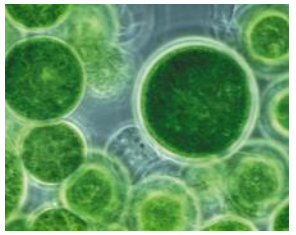
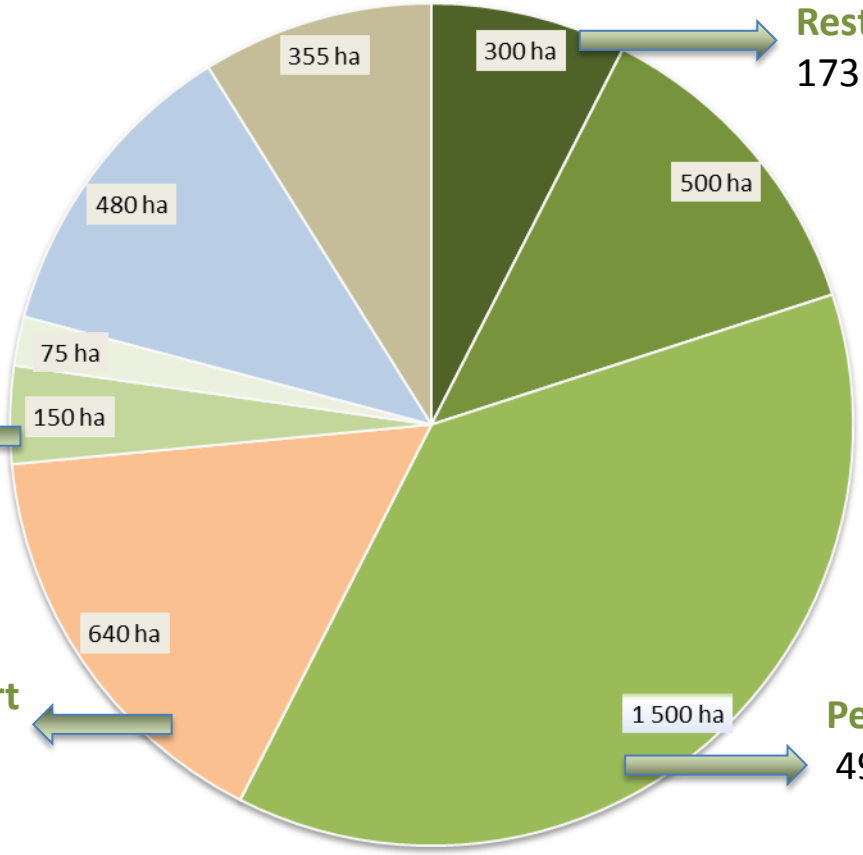




Providing value

Assuming 4000 hectares of Sahara Forest Project facilities:



Restorative foods
173 000 ton tomatoes per year

Employment
of 6 000 people
and support of 30 000

Biofuel
7,5 million L per year

Clean energy for export
280 GWh per year

Permanent CO_2 storage
49 500 tons per year

Making a difference

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- **Knowledge Transfer**: SFP will build training centers where local people are trained in SFP operations
- **Employment**: SFP provides employment for both high and low skilled workers
- **Fighting climate change**: SFP produces clean energy and captures CO_2 in the ground by greening the deserts
- **Conflict reduction**: Food, water and energy security are global challenges closely linked to stability and peace




Projects under execution

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Jordan

- First presented to His Majesty King Abdullah II bin Al Hussein in 2010
- MoU with ASEZA securing land and pipeline pathway in 2011
- Extensive cooperation between academia and business and strong bilateral support
- Finalized feasibility studies financed by the Norwegian Ministry of Foreign Affairs

Projects under execution

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Qatar

- MoU with Yara International and Qafco March 2011
- Scientific feasibility study completed
- MoU signed for building first Pilot Facility in Qatar February 2012
- Pilot Facility operational December 2012

Proposed Test and Demonstration Center

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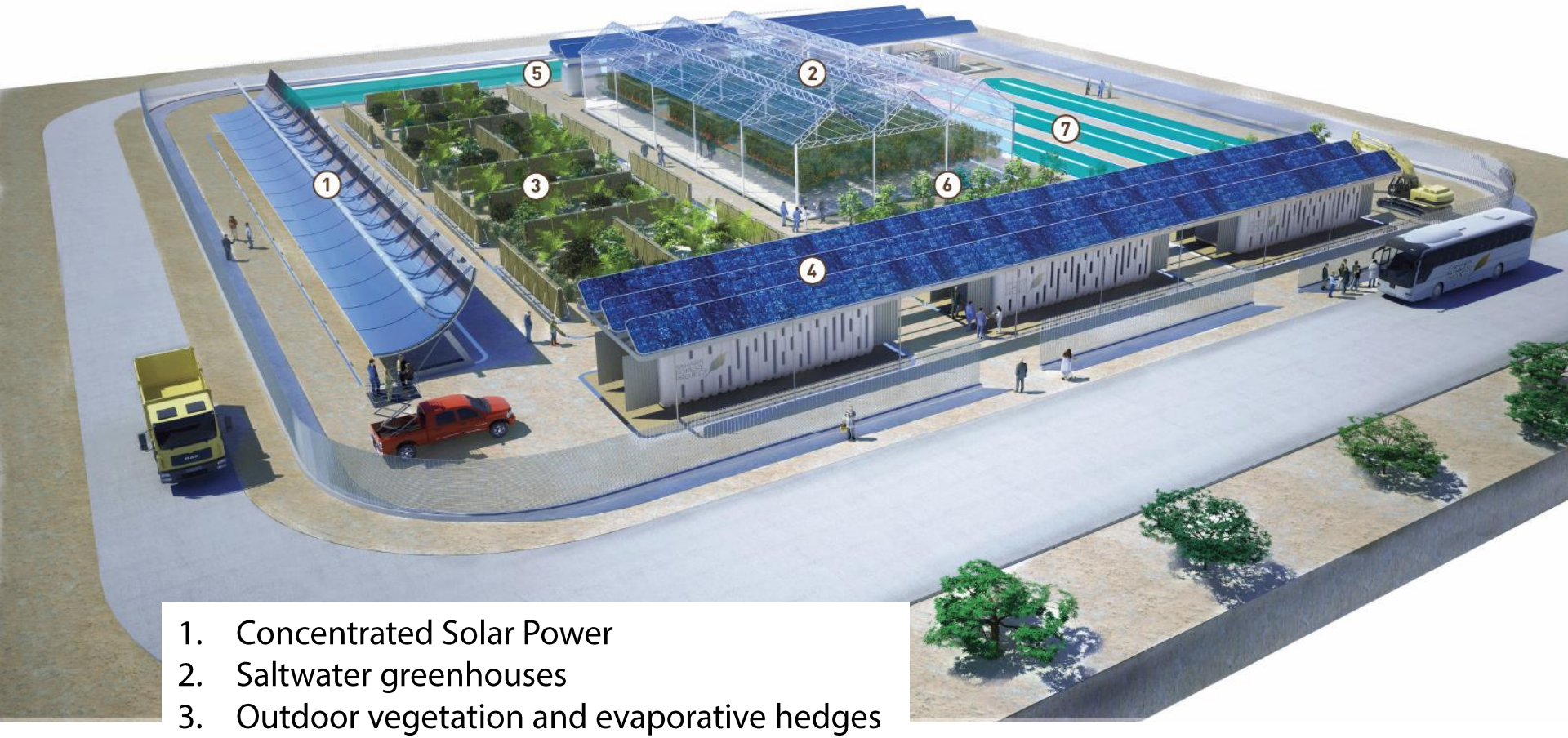
The Pilot Plant in Qatar



1. Concentrated Solar Power
2. Saltwater greenhouses
3. Outdoor vegetation and evaporative hedges
4. Photovoltaic Solar Power
5. Salt production
6. Halophytes
7. Algae production

The Pilot Plant in Qatar